

ABSTRACT

A micro-electromechanical drive mechanism includes a substrate that incorporates drive circuitry. At least one pair of elongate actuator arms are anchored at a fixed end to the substrate and connected to the drive circuitry. Each actuator arm is of an electrically conductive material and has an active portion that defines a heating circuit that is in electrical contact with the drive circuitry to heat and expand on receipt of an electrical signal from the drive circuitry and cool and contract on termination of that signal and a passive portion that is spaced from the active portion relative to the substrate so that the actuator arm bends and straightens as a result of differential thermal expansion and contraction and an opposed moving end undergoes reciprocal arcuate movement. The actuator arms of the, or each, pair are oriented with the moving ends aligned and facing each other. At least one pair of coupling structures is fast with respective moving ends of the actuator. A working member is fast with and interposed between the, or each, pair of coupling structures. The coupling structures are configured so that said arcuate movement is translated into substantially rectilinear movement of the working member.

10